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Patent and Trademark Office

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/590,406 06/08/00 PALMTEER

W 17541

MMC1/0906

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EXAMINER

VU, Q

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 09/06/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/590,406

Applicant(s)

PALMTEER, WILLIAM JAMES

Examiner

Quynh-Nhu H. Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 21-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

1. Applicant's election without traverse of Group I (claims 1-20) in Paper No. 3 is acknowledged.
2. Claims 21-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 3.

DETAILED ACTION

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

((e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1, 4-6, 9-10 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Gilleo et al. [US 5,971,253].

Gilleo et al. disclose in Figs. 1-3 and 8 a solder-coated article comprising: a dielectric core (28) having a dimension ranging from 50-150 microns; a solderable metal layer (30) over the core; and a solder layer (26, 38, 40) over the metal layer.

As to claim 4, the core (28) is a spherical core.

As to claim 5, the core ranges from 50 -150 microns in diameter.

As to claim 6, the solderable metal layer (30) is selected from copper and nickel.

As to claim 9, Gilleo et al. disclose in Figs. 1-3 and 8 a modified substrate comprising: a substrate (54); a metalized pad (56) on the substrate; a bump feature on the metalized pad; the

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bump feature comprising: a dielectric core (28); a solderable metal layer (30) over the core; and a solder region (26, 38, 40) (see Fig. 8) contacting a portion of the solderable metal layer and at least a portion of the metalized pad (see Figs. 1-3).

As to claims 10 and 12, the substrate is a semiconductor substrate, printed circuit (col. 7, lines 36-45).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-3, 7-8, 11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilleo et al.

As to claims 2-3 and 14-15, Gilleo et al. do not disclose the core is a ceramic or glass. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made of ceramic or glass, since it has been to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

As to claims 7-8, Gilleo et al. do not disclose a composition of the solder comprising 67% Sn/37%Pb solder. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made a solder of Sn/Pb, since it has been to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

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As to claims 11 and 13, the examiner takes official notice that a ceramic substrate and flexible circuit is common knowledge in the art. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a semiconductor substrate or printed circuit board in place of ceramic substrate or flexible circuit.

7. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilleo et al. in view of Itai et al. [US 5,838,069].

As to claim 16, Gilleo et al. disclose in Figs. 1-3 and 8 a solder bonded assembly comprising: a first substrate (42) comprising a first solder pad (48); a second substrate (54 or 52) comprising a second solder pad (58); a dielectric core (28) (see Fig. 8) provided with a solderable metal layer (30) and disposed between the first and second solder pads; and a solder region (38, 40) covering at least a portion of solderable metal layer (30). However, Gilleo et al. does not disclose a solder region covering at least a portion of the first and second solder pad.

Itai et al. disclose in Figs. 1-9 a solder region (7) covering at least a portion of a first pad (4); and second pad (C). Itai et al. further disclose a first and second substrates are select from the group of semiconductor substrate, a ceramic substrate and a printed circuit.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ the solder region being covered at least the portion of the first and second pad, as taught by Itai et al., for the benefit of improving adhesive strength in adherence between the pads and the substrates.

As to claims 17-18, Gilleo et al. do not disclose a first and second substrate are selected from the group consisting of a semiconductor substrate, a ceramic substrate and a printed circuit; wherein the first substrate is a semiconductor substrate and the second substrate

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is a printed circuit. However, the examiner takes official notice that a semiconductor substrate; a ceramic substrate and printed circuit are common knowledge in the art. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the first substrate of semiconductor and a second substrate of printed circuit.

As to claims 19-20, neither Gilleo et al. nor Itai et al. disclose the core is a ceramic or glass. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made of ceramic or glass, since it has been to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shimada et al. [US 6,087,597] disclose a core (11) is a ceramic or glass (col. 3, lines 35-36).

Brofman et al. [US 6,278,184] disclose a solder covering the solder pad (14, 16).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quynh-Nhu H. Vu whose telephone number is 703-305-0850. The examiner can normally be reached on 7:30-5:00 (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 703-308-3301. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

QNV
September 4, 2001

Albert W. Paladini 8-5-01

**ALBERT W. PALADINI
PRIMARY EXAMINER**